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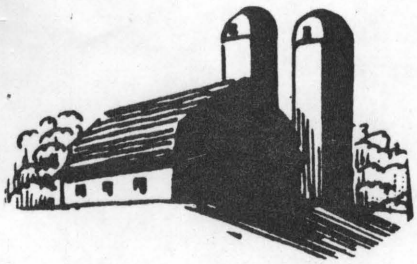

AGRICULTURAL CREDIT AND THE FARM BUSINESS

Capital and Credit Use

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Financial Statements

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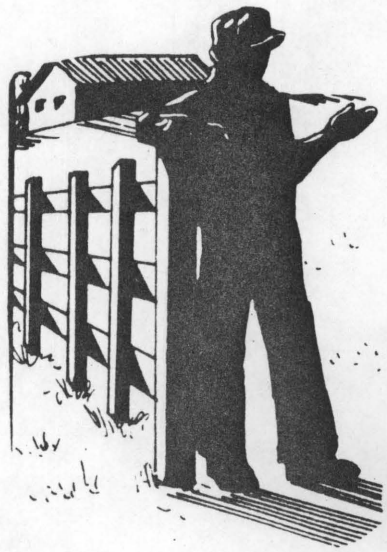

by

Allan E. Lines
Extension Economist

Department of Agricultural Economics and Rural Sociology, The Ohio State University, 1977.

CAPITAL AND CREDIT USE

I. The recent increase in capital and credit use in agriculture has been phenemonal.

A. U. S. Balance Sheet of Agriculture-1960

Assets	Claims	
Total Assets $203.5 bil.	Liabilities	$24.8 bil.
	Owner's Equity	178.7 bil.
	Total Claims	$203.5 bil.

Debt to Total Asset Ratio-12.2

B. U. S. Balance Sheet of Agriculture-1976

Assets	Claims	
Total Assets $589.8 bil.	Liabilities	$ 90.7 bil.
	Owner's Equity	499.1 bil.
	Total Claims	$589.8 bil.

Debt to Total Asset Ratio-15.4

C. Percent Change, 1970-1976

Assets		Claims	
Total Assets	93%	Liabilities	71%
		Owner's Equity	97%

D. Ohio Farm Investment-1974

	Total (millions)	Per Farm
Land and Buildings	$11,129	$113,913
Crops and Livestock	6,869	70,307
Farm Machinery	1,875	19,196
	$19,873	$203,416
Average Investment Per Ohio Farm Worker (159,000 farm workers)		$150,030

Adapted by A. E. Lines from a publication by Michael Boehlje, et. al, Iowa State University.

II. Productivity in agriculture measured by output per man has increased at almost the same rate as the increase in capital per man. Thus, the increased capital intensity of agriculture has resulted in the production of more and more output with less manpower.

III. Just as any other resource, capital and credit has certain characteristics that limit its uses in the farm business. Knowledge of these characteristics is as essential to the farm manager as information about the physical and economic characteristics of the soil or a livestock enterprise.

SOURCES OF FUNDS

The various types of lenders who provide debt to farm businesses obtain their funds from various sources. The process of obtaining funds from one source such as depositors in commercial banks and making it available to farmers or other users through loans is known as financial intermediation. The source of funds plus the regulations placed on lenders to protect those who provide the funds are important in determining their lending policies. The following discussion describes the source of funds, limitations on agricultural lending and types of loans for several important lenders in the field of agricultural credit.

I. Commercial Banks

A. Source of loan funds.

1. Demand and time deposits
2. Bank capital - bank stock and surplus (retained earnings).
3. Through correspondent banks and Federal Reserve
4. Participation with local PCA, FHA, or discounting loans with Federal Intermediate Credit Bank

B. Limitations on agricultural lending.

1. Alternative opportunities for investment in government securities, municipal bonds, etc., considering yields, security and need for diversification.
2. Alternative types of loans including installment, commercial and business, etc.
3. Reserve requirements limit the aggregate volume of deposits available for loans and investments.
4. Bank capital limits the size of the loan to one individual.

C. Types of agricultural loans.

1. Short term or operating - 1 year or less.
2. Intermediate term - 1-7 years.
3. Long term or real estate - over 7 years (limited availability).

II. Production Credit Associations

A. Source of loan funds

1. Borrowings from Federal Intermediate Credit Bank which obtains its funds by selling debentures on the open market, usually with 9-month or shorter maturity dates.
2. Capital stock and retained earnings.
3. Participation with local commercial banks.

B. Limitations on lending.

1. Purchase by borrower of stock in PCA equal to 5 percent of loan; in some PCA's, 10 percent stock purchase is required.
2. Loans can be made for farm-related services (for example, custom operators) and rural homes as well as for farm production purposes.

C. Types of agricultural loans.

1. Short term or operating - 1 year or less.
2. Intermediate term - 1 to 7 years.

III. Farmers Home Administration

A. Source of loan funds.

1. Congressional appropriations.
2. From other lenders as insured or guaranteed loans.
3. Emergency and revolving funds.

B. Limitation on agricultural lending.

1. Made only to farmers who are unable to obtain adequate credit from other sources at reasonable rates.
2. May lend up to 100 percent of fair and reasonable value of property
3. Maximum limits are $50,000 for an operating loan and $100,000 for a farm ownership (real estate) loan.

C. Types of agricultural loans.

1. Short, intermediate and long term.
2. Relatively high level supervision required.

IV. Merchants and Dealers

A. Sources of loan funds.

1. Borrowings from lending institutions.
2. Capital and retained earnings.
3. Borrowings from supplier, distributor or manufacturer.

B. Limitations on agricultural lending.

1. Liquidity needed to operate their business.
2. Restrictions by lenders and others who furnished capital to merchant or dealer.

C. Types of loans.

1. Generally of the sales contract type.

2. Use add-on interest, discount for cash, interest plus carrying charge or installment payment as method of determining total charges.
3. Mostly short-term loans except on machinery and equipment.

V. Insurance Companies

A. Source of loan funds.

1. Premiums received on insurance policies.
2. Reserves held to meet insurance contract payments.
3. Capital and retained earnings.

B. Limitations on agricultural lending.

1. Alternative opportunities for investment by company considering security, yield, and need for diversification.
2. Policy loans to owners of insurance policies have first priority
3. Have little interest in short-term loans .
4. Selective in areas of country in which they will make loans.

C. Types of loans.

1. Real estate loans up to about 30 years.
2. Improvement loans secured by real estate mortgages.

VI. Federal Land Bank Associations

A. Source of loan funds.

1. Sale of bonds to investing public on the national money markets.
2. Capital stock and retained earnings.

B. Limitations on agricultural lending.

1. Appraisals and loan limits are based on standards set by the Farm Credit Administration according to criteria established by congressional action; current limit is 85 percent of appraised value.
2. Purchase by borrower of stock in FLBA equal to 5 percent of loan.

C. Types of loans.

1. Real estate loans amortized up to 40 years.
2. Improvement loans secured by real estate mortgages.

VII. Individuals

A large volume of loan funds or credit is made available by individuals under widely varying conditions in agriculture. They range from farm real estate contracts or mortgages to personal unsecured loans.

VIII. Small Loan Companies

Most loans made by small loan companies in agriculture are for consumption goods, but some small production equipment is financed through this source.

IX. Market Share of Various Landers (Ohio)

AGRICULTURAL CREDIT IN OHIO (January)
(MILLIONS OF DOLLARS)

	1960		1975		Percent Change
	Total	Percent	Total	Percent	60-75
Non Real Estate					
Commercial Banks	$113	33%	$ 276	33%	+123
P.C.A.'s F.I.C.B.	79	23%	400	48%	+420
F.H.A.	6	2%	16	2%	+167
Merchants, Dealers, and Others	144	42%	144	17%	0
TOTAL	$342	100%	$ 836	100%	+144
Real Estate					
Commercial Banks	$ 86	9%	$ 322	25%	+274
Insurance Co.	79	21%	89	7%	+ 12
Federal Land Banks	79	21%	64	28%	+361
F.H.A.	8	2%	40	3%	+400
Individuals, Other	133	34%	479	37%	+260
TOTAL	$385	100%	$1,294	100%	+236
Total Agricultural Credit	$727		$2,130		

THE ROLE OF CREDIT IN THE FARM BUSINESS

Credit is an important resource in nearly all commercial farm businesses. It provides the opportunity to pay the cost of using additional resources now from future earnings.

The potential improvement of net income should be the determining factor in the decision of whether or not to use credit. There are several ways that credit can contribute to the improvement of net income of a farm business. If you are planning to borrow money or making a loan, ask yourself if the loan funds will be used to do one or more of the following:

1. Create and maintain an adequate size business.

   In most farm businesses this means expanding its size to take advantage of the economies of scale. In today's farming the high proportion of fixed to total costs makes this essential to success.

2. Increase the efficiency of the farm business.

   The use of credit may make it possible to substitute one resource for another such as machinery for labor as a means of reducing costs, improving timeliness and increasing the efficiency of the farm business. Intensifying the production of present resources such as using fertilizer, adding equipment for more timely operations or carrying animals to more profitable market weights also can increase the efficiency.

3. Adjust the business to changing economic conditions.

   New technological developments or changing market conditions can make it essential to make major changes in the farm business. Adopting confinement hog production technology or acquiring larger tillage, planting, harvesting or power equipment are examples. The change to pipeline milkers and bulk tanks by dairy farmers or from dairying to another enterprise means major investments to meet new market requirements. Credit can assist in making these kinds of changes.

4. Meet seasonal and annual fluctuations in income and expenditures.

   Most Corn Belt farms have wide seasonal and often annual fluctuations in expenditures and incomes. Cash inflows and outflows typically do not occur at the same time of the year. Using credit to match cash inflows and outflows is essential to efficient operation of the farm business.

5. Protect the business against adverse situations.

   Weather, disease and price are all uncertainties in the farm business. Good management can reduce the risk, but not eliminate it. In addition, since most farm businesses have a sole proprietor who also

represents the major labor supply, his health is an added risk. Credit can play a major role in protecting the farm business when such adverse conditions occur. Maintaining some credit in reserve that can be used in adverse situations may be an important means of protecting the farm business from unpredictable risks.

6. Provide continuity of a farm business.

The transfer of an on-going farm business from one proprietor to another involves large quantities of capital. Without credit, many farm businesses would have to be liquidated with the change of operators because non-farm heirs frequently want their inheritance in cash, rather than maintaining ownership of farm real estate and other assets. If the transfer is from father to son, credit still plays a major role by enabling the son to purchase his father's interest and expand and operate the farm efficiently.

The role that credit performs in the individual farm business should be one of the major determining factors in whether a potential borrower should use credit and whether a lender should make it available.

THE 3 R'S OF CREDIT

RISK, RETURNS, AND REPAYMENT

Three important factors - risk, returns and repayment are major determinants of the use of credit. Following is a list of several considerations under each of these factors:

I. Risk and Risk-Bearing Ability

A. Leverage and Financial Risk

1. Leverage measures the relationship between the debt and total assets of a firm. As the leverage ratio increases, the financial risk increases.
2. A measure of financial risk is the debt to asset or debt to net worth ratio. These ratios are obtained from the balance sheet or net worth statement which is the basic document to determine risk bearing ability.

B. Financial risk is also influenced by other risks.

1. Production risk-disease, weather, insects, etc. Some of these risks can be covered by insurance (fire, hail, windstorm, liability).
2. Price risk-unexpected changes in product and input prices. In some cases these risks can be reduced by contracts or use of futures markets.
3. Innovation-New innovations can make current production methods and facilities obsolete and inefficient compared to new facilities.

C. Risk and uncertainty.

1. Risk can be identified with a predictable probability based on past experiences and observations. Example - 20 percent chance of rain.
2. Uncertainty-a probability statement or distribution cannot be determined. There is no assurance that bad is followed by good, or vice versa.

II. Returns

A. Will the use of credit add to potential profits?
B. Is the planned use of credit the most profitable use in the farm business?
C. Are the projected input-output data and price expectations realistic and do they reflect the risk involved?
D. Is potential obsolescence more significant than normal depreciation in determining costs?

III. Repayment Capacity

A. Self-liquidating loans-should be used for goods or services which are liquidated, used up or depreciated.

1. Short term-generally self-liquidating but still must be paid out of gross income after family living, taxes and prior lien

borrowing commitments are paid.

2. Intermediate term-partially self-liquidating, depending on term of loan and cash income available after operating expenses, taxes and family living have been paid.

B. Loans that are not self-liquidating-used for consumption goods and services and nondepreciable assets such as land.

1. Paid from net cash income after expenditures for operating and family living expenses, taxes and short-term borrowings have been made.
2. Be careful of loans that are used for inventory accumulation rather to generate cash that can be used for debt repayment-beef cow herds where all the heifers are held for replacements are an example.

FINANCIAL STATEMENT (BALANCE SHEET)

The purpose of the balance sheet (net worth statement) is to illustrate the current solvency of the farm business. The balance sheet is the basic document of risk bearing ability. It illustrates the financial picture of the firm at a point in time. A series of statements for comparable dates over a period of years helps in forming an opinion of past financial experience. These trends give useful evidence of what might be logically expected in the future. The balance sheet incorporates the basic accounting equation of ASSETS = LIABILITIES + NET WORTH (OWNER'S EQUITY).

I. Assets

Three major groupings--current, intermediate, and long term or fixed--are necessary to obtain a meaningful description of the assets of a modern farm operation.

A. Current assets.

1. Current assets consist of cash or other assets which will become cash through the normal operation of the farm during the course of a business year. Included are all assets held for sale or to be fed and sold during the normal annual marketing or feeding cycle. Certain other assets which can be quickly converted into cash, such as marketable securities and cash value of life insurance, are usually also classified as current assets.

2. The value of current assets should be determined by the current market price at the time the statement is prepared.

B. Intermediate assets.

1. Intermediate assets consist of resources used primarily to support farm production rather than those which are expected to be sold or converted into cash through the normal flow of sales. Included are such items as machinery, equipment and breeding livestock. These assets are distinguished from those classified as long term or fixed, since they have a shorter useful life, usually one to seven years.

2. It is desirable to make the financial statement consistent with the profit and loss or income statement. Thus, the values placed on the intermediate assets should be the same as the remaining values after depreciation of depreciable assets as reported in the profit and loss or income tax statement.

C. Long term or Fixed assets.

1. These are permanent in nature and consist primarily of farm land and improvements. It may be appropriate to value land and improvements as a unit, but separate values can be used to facilitate a more accurate indication of capital improvements made subsequent to the original purchase. The basis for valuing real estate should be

decided upon and then used consistently.

2. Significant adjustments in real estate values to reflect price appreciation should be noted separately.

3. Nonfarm property and household furnishings should also be classified as fixed assets.

II. Liabilities

Three groupings--current, intermediate term and long term--should be used to match liabilities with assets. Such a division permits a realistic look at repayment requirements.

A. Current liabilities

Liabilities due and payable on demand or within the operating year--normally a 12-month period--are entered as current liabilities. These include operating notes, accounts, rent, taxes, interest due, loans against cash value of life insurance, plus that portion of intermediate- and long-term debt due within the next 12 months.

B. Intermediate-term liabilities

Intermediate term liabilities include nonreal estate notes and contracts written for the purpose of meeting other than seasonal needs. Terms are normally for periods of more than 12 months but less than 7-10 years. Farm improvements, equipment purchases, additions to breeding and dairy stock, and major adjustments to the farming operation give rise to liabilities which might clearly fall within this category.

C. Long-term liabilities

Long-term liabilities consist of mortgages and land contracts on the farm, less the principal balance due within 12 months.

III. Net Worth (Total Assets Less Total Liabilities)

Net Worth reflects the owner's investment or equity in the farm business and other personal property if the business were liquidated at the time of making the financial statement.

FARM BUSINESS AND CREDIT ANALYSIS

The use of credit places a prior lien on future income. Analyzing the past performance of the farm business as a means of projecting possible future performance is essential in the profitable use of agricultural credit.

The following outline includes the essential information needed for a farm business analysis to evaluate the use of agricultural credit. Farm businesses which prepare an annual financial statement (balance sheet) and an annual income tax return need only to add crop and livestock production records to have available all the information that is needed to make this type of analysis. It should be recognized that it is necessary to reorganize the data from these sources to provide a systematic approach to the business analysis.

I. Resources-The information on resources available is obtained from a balance sheet.

A. Resource and Financial (Assets and Claims) Inventory.

1. Land (both owned and rented)-Acres, production potential and value.

2. Capital-Feed, livestock, machinery, equipment and cash available-quantity and value.

3. Credit-Current, intermediate and long-term liabilities.

4. Labor-Operator and family labor supply plus hired labor.

B. Financial Ratio Analysis

There are several significant financial ratios in farm business analysis that are useful in indicating the current financial strength of the business as well as its trend over time. They include ratios in the following general categories.

1. Adequacy of capital

a. Current assets to current liabilities - This indicates the current assets available to meet current indebtedness. A farm business' net working capital is the amount of current assets in excess of its current liabilities. Improvement in working capital is indicated by an upward trend in this ratio.

b. Total debt to net worth - This represents the creditor's contribution to the total capital used in the business. A successful business will have an increasing net worth in relation to the total debt or a downward trend in this ratio.

2. Performance

   a. Gross receipts or gross profit to total assets - This reflects the effectiveness in the use of assets. The higher the ratio, the greater the turnover of assets, maximizing the opportunity to produce profit.

   b. Profit to total assets - This indicates the percentage return realized on all invested resources. To get a true picture, a charge for operator and family labor in terms of possible alternative income opportunities should be deducted from profits before calculating the return on investment.

II. Income-The information on farm income is obtained from an income statement or the annual income tax return.

A. Total Net Farm Income .

1. Is the net farm income large enough now to provide a satisfactory living?

2. Is the net income large enough to provide retained earnings in the farm business, or does increased equity come only from price inflation of owned assets?

3. Are capital and labor earnings competitive with alternative opportunities?

B. Sources of Income or Net Production .

1. Value of crop production-Land is a fixed asset with no alternative agricultural use except for crop and pasture production. If all crops and pasture were sold for cash, what would be the total income (acres X yield X market price)?

2. Income added by livestock-The resources used in livestock production have alternative uses. Even though the farm business may receive all of its cash income from livestock sales, how much income was added by processing feed through livestock?

3. Other income-What are the other sources of income and how significant are they?

C. Production and Cost Analysis .

The following five factors provide most of the criteria needed to determine the production efficiency in a farm business. They provide an indication of the management ability of the individual operator.

1. Crop production per acre-Value of crop production divided by total acres or acres in rotation. This reflects both yield level and crop selection. It should equal about 20 percent of the current value of the farm based on the total acres in the farm.

2. Livestock income per $100 feed fed-This ratio will vary by type of enterprise and price relationships during a particular year. It reflects the interrelationship between livestock production efficiency, marketing and enterprise combination on an individual farm. On most Corn Belt farms that have hogs plus another livestock enterprise, it should average $150 to $160.

3. Production per man -No factor is more directly correlated with net farm income. Labor costs, whether operator or hired, have risen more rapidly than any other cost in the farm business. Successfully managed farms in the Corn Belt have $35,000 to $50,000 gross profits or net production per man.

4. Income per $1 expense-Pushing for a larger volume without adequate cost control has caused many farm businesses to fail. Most well-managed businesses will have $2 or more gross profits or net production for each $1 of operating and fixed expenses.

5. Machinery and power cost per acre-This includes repairs, depreciation, fuel and oil. In today's highly mechanized farm business, this is an important cost control factor. On a 240 to 320 acre Corn Belt farm, it averages from $37 to $45 per acre in rotation.

D. Enterprise Analysis

There are several easily obtainable efficiency ratios that indicate the level of performance in various enterprises. These single enterprise items are closely related to disease and insect control, feed conversions, marketing and related items. They include:

1. Yield per acre
2. Fertilizer cost per acre
3. Pigs weaned per litter
4. Percent calves weaned per cow bred
5. Dairy income per cow
6. Egg income per hen
7. Average daily gain on feeding cattle

III. Cash Flow

A. Repayment capacity often limits the use of credit in the farm business even though its use may be potentially profitable. The cash flow budget is a necessary management tool to determine repayment capacity.

B. Cash flow analysis indicates when and how much cash will be available for debt repayment. It is a "money map" that summarizes expected cash income and cash expenditures for the coming year.

C. A cash flow budget can be particularly useful to:

1. A farmer with moderate debt who is trying to expand or a young farmer trying to get a foothold in farming.

2. A farmer who is evaluating a major purchase such as new livestock facilities or the purchase of additional land.

3. A farmer in financial stress who may have to refinance or develop a new plan to repay his loan.

4. Any farmer who wants to project his debt servicing capacity and credit needs and maintain control of his cash income and expenses.

D. A cash flow budget considers only cash transactions. Non-cash items such as depreciation are not included in a cash flow budget. Instead the principal and interest payments associated with a capital item are included in the cash flow analysis.

E. In addition to cash income and expenses related to the farm business, a cash flow statement also includes the cash outflows for family living expenses and taxes. Thus, cash flow analysis considers all claims on income that may reduce repayment capacity by combining both business and personal expenditures.

F. Advantages of cash flow budgeting.

1. Requires a plan as to enterprise combination and thus encourages production planning.

2. Identifies seasonal peaks in borrowing so that credit needs can be anticipated.

3. Determines repayment capacity and enables the farmer to tailor repayment plans to capacity.

4. Can be used to develop a projected income statement and balance sheet.

5. Can be used to determine the expected financial security of the business.

6. Provides the basis to maintain financial control based on comparing actual financial performance with planned expectations.

7. Provides a means of communication between borrower and lender.

G. To develop a cash flow, the following information must be summarized on a monthly, bi-monthly or quarterly basis.

1. Expected cash income including:

    a. Crop sales
    b. Livestock sales including breeding stock
    c. Sales of capital items
    d. Government payments and miscellaneous income
    e. Non-farm income

2. Expected cash expenditures including:

    a. Operating expenses
    b. Feed and livestock purchases
    c. Taxes, insurance and rent
    d. Debt, account and contract payments plus interest
    e. All family living expenses
    f. Life insurance premiums
    g. New capital purchases

REPAYMENT CAPACITY AND PLANS

A basic question asked by many farmers is "How far in debt can I safely go?" The answer to this question will be different for each farmer and will depend on the risk, return and repayment capacity in each farming operation. We have indicated earlier how a cash flow statement can be used to estimate repayment capacity. Now we will show how the idea of repayment capacity can be used to determine how far in debt you can go.

I. Repayment Capacity-Repayment capacity measures the ability of the firm to generate cash which can be used in repaying a loan.

A. Table 1 summarizes the amount of debt that can be supported with each $1,000 of annual payment capacity. Thus, at 8 percent interest, each $1,000 of annual payment capacity will pay the principal plus interest on a $6,710 loan in 10 years.

B. Assume that a farmer has the following income and expenses:

Cash Receipts	$34,000
Cash Expenses	20,000
Net Cash Income	14,000
Living Expenses	8,000
Cash for Debt Servicing	$6,000

1. $6,000 of annual payment capacity can support an 8 percent, ten year loan of $40,260 ($6,710 x 6).

2. If the terms on the loan are extended to 20 years (8%) $6,000 of annual payment capacity will support a $50,908 loan ($9,818 x 6).

C. In some cases it is desirable to know the annual payment necessary to pay off (amortize) a loan of a particular size over a specific number of years. (Table 2).

1. To repay an 8 percent, $20,000 loan in two years requires $11,215 (560.77 x 20) annually in cash.

2. Only $6,039 ($301.93 x 20) is required to repay this 8 percent, $20,000 loan in 4 years and $4,392 ($216.32 x 20) in 6 years.

D. One means that can be used to expand the debt carrying capacity is to extend the term of the loan.

1. Table 1 indicates that for an 8 percent loan, $1,000 of repayment capacity will support $6,710 of 10 year debt and $10,675 of 25 year debt.

2. Thus, the same amount of cash will support approximately $4,000 more debt if the term can be lengthened by 15 years.

Table 1 Debt Which Can Be Supported Per $1000.00 Annual Payment Capacity

Years	Rate 6%	6½%	7%	7½%	8%	8½%	9%	9½%	10%	12%
1	943	939	935	930	926	922	917	913	909	893
2	1,833	1,821	1,808	1,796	1,783	1,771	1,759	1,747	1,754	1,690
3	2,673	2,648	2,624	2,601	2,577	2,554	2,531	2,509	2,487	2,402
4	3,465	3,426	3,387	3,349	3,312	3,276	3,240	3,204	3,170	3,037
5	4,212	4,156	4,100	4,046	3,993	3,941	3,890	3,840	3,791	3,605
6	4,917	4,841	4,767	4,694	4,623	4,554	4,486	4,420	4,355	4,111
7	5,582	5,485	5,389	5,297	5,206	5,119	5,033	4,950	4,868	4,564
8	6,210	6,089	5,971	5,857	5,747	5,639	5,535	5,433	5,335	4,968
9	6,802	6,656	6,515	6,379	6,247	6,119	5,995	5,875	5,759	5,328
10	7,360	7,189	7,024	6,864	6,710	6,561	6,418	6,279	6,145	5,650
11	7,887	7,689	7,499	7,315	7,139	6,969	6,805	6,647	6,495	5,938
12	8,384	8,159	7,943	7,735	7,536	7,345	7,161	6,984	6,814	6,194
13	8,853	8,600	8,358	8,126	7,904	7,691	7,487	7,291	7,103	6,424
14	9,295	9,014	8,745	8,489	8,244	8,010	7,786	7,572	7,367	6,628
15	9,712	9,403	9,108	8,827	8,559	8,304	8,061	7,828	7,606	6,811
20	11,470	11,019	10,594	10,194	9,818	9,463	9,129	8,812	8,514	7,469
25	12,783	12,198	11,654	11,147	10,675	10,234	9,823	9,438	9,077	7,843
30	13,765	13,059	12,409	11,810	11,258	10,747	10,274	9,835	9,427	8,055
35	14,498	13,687	12,948	12,273	11,655	11,088	10,567	10,087	9,644	8,175
40	15,046	14,146	13,332	12, 594	11,925	11,315	10,757	10,247	9,779	8,244

Table 2 Annual Payment Necessary to Amortize a Loan of $1000

Years	Rate									
	6%	6½%	7%	7½%	8%	8½%	9%	9½%	10%	12%
2	545.44	549.27	553.10	556.93	560.77	564.62	568.47	572.33	576.20	591.70
3	374.11	377.58	381.06	384.54	388.04	391.54	395.06	398.58	402.12	416.35
4	288.60	291.91	295.23	298.57	301.93	305.29	308.67	312.07	315.48	329.24
5	237.40	240.64	243.90	247.17	250.46	253.77	257.10	260.44	263.80	277.41
6	203.37	206.57	209.80	213.05	216.32	219.61	222.92	226.25	229.61	243.23
7	179.14	182.34	185.56	188.81	192.08	195.37	198.70	202.04	205.41	219.12
8	161.04	164.24	167.47	170.73	174.02	177.34	180.68	184.05	187.45	201.31
9	147.03	150.24	153.49	156.77	160.08	163.43	166.80	170.21	173.65	187.68
10	135.87	139.11	142.38	145.69	149.03	152.41	155.83	159.27	162.75	176.99
11	126.80	130.06	133.36	136.70	140.08	143.50	146.95	150.44	153.97	168.42
12	119.28	122.57	125.91	129.28	132.70	136.16	139.66	143.19	146.77	161.44
13	112.97	116.29	119.66	123.07	126.53	130.03	133.57	137.16	140.78	155.68
14	107.59	110.95	114.35	117.80	121.30	124.85	128.44	132.07	135.75	150.88
15	102.97	106.36	109.80	113.29	116.83	120.43	124.06	127.75	131.48	146.83
20	87.19	90.76	94.40	98.10	101.86	105.68	109.55	113.48	117.46	133.88
25	78.23	81.99	85.82	89.72	93.68	97.72	101.81	105.96	110.17	127.50
30	72.65	76.58	80.59	84.68	88.83	93.06	97.34	101.69	106.08	124.15
35	68.98	73.07	77.24	81.49	85.81	90.19	94.64	99.14	103.69	122.32
40	66.47	70.70	75.01	79.41	83.87	88.39	92.96	97.59	102.26	121.31

II. Repayment Plans

A. A major problem that occurs in farm finance is getting the repayment terms on borrowed money compatible with the repayment ability. This problem occurs because (1) repayment ability changes each year as income changes, (2) in many cases a farmer needs more long or intermediate term credit than he can obtain or has collateral to support, (3) poor planning of repayment schedules, (4) credit is obtained from numerous sources with no coordination of repayment among sources.

B. Repayment Plans for Short Term Loans.

1. Study receipts of business and tie payment dates to expected income dates.

2. Make payments monthly only if cash income comes in monthly from product sales such as in dairy or monthly hog sales. For crop farms, payments should be annually or possibly semi-annually.

C. Repayment Plans for Intermediate and Long Term Loans.

1. Use an amortization plan for most intermediate or long term assets. Puts the borrower on a regular payment schedule (monthly, quarterly, annually, etc.).

2. For intermediate term assets, particularly machinery, repayment over one-half to two-thirds of the life of the asset is most realistic.

3. For long term loans, two types of amortization plans can be used.

a. Even total payment plan - Equal payments over entire period of the loan with increasing portion of each payment going to principal and less to interest as more payments are made.

b. Even principal payment plan - Equal principal payments over the life of the loan with decreasing interest payments as more payments are made.

c. Comparison of Repayment Plans.

Even Total Payment Plan-$10,000, 10 years, 8 Percent

Year	Payment	Principal	Interest	Balance
1	$ 1490	$ 690	$ 800	$ 9310
2	1490	745	745	8565
3	1490	805	685	7760
4	1490	869	621	6891
5	1490	939	551	5952
6	1490	1014	476	4938
7	1490	1095	398	3843
8	1490	1183	307	2659
9	1490	1277	213	1383
10	1490	1379	111	--

Even Principal Payment Plan-$10,000, 10 Years, 8 Percent

Year	Payment	Principal	Interest	Balance
1	$ 1800	$ 1000	$ 800	$ 9000
2	1720	1000	720	8000
3	1640	1000	640	7000
4	1560	1000	560	6000
5	1480	1000	480	5000
6	1400	1000	400	4000
7	1320	1000	320	3000
8	1240	1000	240	2000
9	1160	1000	160	1000
10	1080	1000	80	--

D. Setting up reasonable repayment plans may be the single most important factor in keeping the use of credit on a sound foundation. Scheduling acceptable repayment plans is also a good reason to work with only one lender.

III. Strengthening Repayment Capacity

The following four methods can be used to strengthen the repayment capacity of the farm business.

A. Increase the owner's equity in the business.

B. Make maximum use of self liquidating loans.

C. Use the total capital structure of the business in financing. Use land equity if available to lengthen out the repayment schedule.

D. Plan the repayment schedule based on a cash flow budget.

CREDIT COSTS

I. The formula for determining the annual rate of interest is:

$$\frac{2 \times \text{Total Finance Charge} \times \text{Number of Payments}}{\text{Original Loan} \times \text{Number of years} \times \text{Number of Payments Plus One}} = \text{Annual Rate of Interest}$$

II. Examples.

A. Borrow $1,200 at 7% add-on interest for one year with 12 equal monthly payments.

$1,200 X 7% = $84 + $1200 = $1284 total payment
$1,284 ÷ 12 = $107 per month.

$$\frac{2 \times 84 \times 12}{1{,}200 \times 1 \times (12+1)} = \frac{2016}{15{,}600} = 12.9\% \text{ annual rate of interest}$$

B. $1000 fertilizer - 5% cash discount or carry for 6 months, no finance charge. $1000 x 5% = $50 finance charge. Cash Cost $950.

$$\frac{2 \times 50 \times 1}{950 \times .5 \times (1+1)} = \frac{100}{950} = 10.5\% \text{ annual rate of interest.}$$

C. Tractor traded for $6,000, 3 years to pay; dealer financed, three annual payments of $2,480.

$2,480 X 3 = $7,440 less $6,000 = $1,440 finance charge.

$$\frac{2 \times 1{,}440 \times 3}{6{,}000 \times 3 \times (3+1)} = \frac{8640}{72{,}000} = 12.0\% \text{ annual rate of interest.}$$

D. Purchase an appliance for $300, pay $15 per month for 24 months.

$15 X 24 = $360 less $300 = $60 finance charge.

$$\frac{2 \times 60 \times 24}{300 \times 2 \times (24+1)} = \frac{2880}{15{,}000} = 19.2\% \text{ annual rate of interest.}$$

E. Purchase a coat for $50, pay $11 per month for 5 months.

$11 X 5 = $55 less $50 = $5 finance charge.

$$\frac{2 \times 5 \times 5}{50 \times .42 \times (5+1)} = \frac{50}{126} = 39.7\% \text{ annual rate of interest.}$$

III. Additional fees and charges must be included in the cost of credit.

A. Loan fee, inspection or appraisal fee or loan servicing fee. Some lenders charge a fee to complete the loan such as 1% of the face value of the loan.

B. Any stock purchase necessary with PCA's or Federal Land Bank loans (will vary from 5 to 10% of the amount of the loan depending on the local Association).

C. Compensating balances which require that a specified percentage of the loan be kept on deposit in the lending institution.

D. Compulsory insurance such as credit life insurance, crop insurance, or other property damage insurance.

E. Mortgage recording fees and taxes.

WHY CREDIT LINES GET INTO TROUBLE

There are innumerable reasons why individual credit lines get into trouble. Following is a summary of the most significant reasons. Both lender and borrower should use this as a guide to improve the use of credit.

I. Inefficient farm businesses due to:

   A. Inadequate size - not enough income to cover living expenses, farm expenses and service debt.

   B. Failure to adopt new technology.

   C. Lack of management skill and ability of the operator.

      1. In cost control
      2. In environmental control
      3. Timeliness

   D. Lack of experience and/or initiative.

II. Using unrealistic price and yield assumptions in making plans and decisions.

III. Failure to accurately analyze the income opportunities, resource needs, management requirements and expected cash flow for different enterprises in the farm business.

IV. Lack of any added return - added cost analysis.

V. Failure to relate repayment requirements to the liquidity of the farm business.

   A. Incomplete budgeting of expected income and expense and cash flows.
   B. Failure to recognize true prior liens, especially family living expenses, on income in planning repayment schedules.

VI. Failure to control living expenses in relation to farm business income.

VII. Failure to recognize payments due this year on intermediate and long-term loans as well as income tax, property tax and similar items as current liabilities.

VIII. Building equity in working and fixed assets too rapidly and thus jeopardizing the liquidity of the business or the relationship between current assets and current liabilities.

IX. Building equity in land contracts or mortgages by liquidation of current assets.

X. Transferring of liquid assets to farm improvements that do not increase total assets

XI. Using multiple sources of credit resulting in a lack of control of the credit line by both lender or borrower.

XII. Lack of communication between lender and borrower.

- A. Inadequate credit files by lender
- B. Inadequate recording of agreed plans by borrower
- C. Failure to communicate true lending policy by lender

XIII. Failure to understand or recognize the importance of supervision of the loan both by lender and borrower.

XIV. Lack of adequate information - quantitative and qualitative.

- A. Incomplete financial statements
- B. Inaccurate profit and loss statements
- C. No cash flow budgets

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